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World Forum for Harmonization of Vehicle Regulations

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Item 5(j) of the provisional agenda

Collective amendments - UN Regulations Nos. 48 and 112

### **Proposal for Collective amendments to Regulations Nos. 48 and 112**

**Submitted by the expert from the Working Party "Brussels 1952"\***

The text reproduced below was prepared by the expert from the Working Party "Brussels 1952" (GTB) to clearly define the conditions under which voltage control gear may be used in conjunction with filament light sources. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

### Regulation No.48, Supplement 10 to the 04 series

Paragraph 5.27., amend to read:

- "5.27. For vehicles of M and N categories, the applicant shall demonstrate to the Technical Service responsible for type approval testing that the electric power supply conditions for the devices indicated in 2.7.9, 2.7.10, 2.7.12, 2.7.14 and 2.7.15 above comply, when the electrical system of the vehicle is in a constant voltage operating condition, representative for the relevant category of powered vehicle as specified by the applicant, with the following provisions:
- 5.27.1. The voltage supplied at the terminals of devices which, according to their type approval documentation, have been tested by the application of a special power supply/electronic light source control gear, or in a secondary operating mode or at a voltage requested by the applicant, shall not exceed the voltage specified for the relevant devices or functions as they have been approved.
- 5.27.2. In all cases of electric power supply conditions not covered by paragraph 5.27.1., the voltage at the terminals of the device(s) or function(s) shall not exceed 6.75V (6 Volt-Systems), 13.5V (12 Volt-Systems) or 28.V (24 Volt-Systems) by more than 3 per cent. **The means of controlling the maximum voltage at the terminals of the device may, for convenience, be located within the body of the device.**
- 5.27.3 The provisions of paragraphs 5.27.1. and 5.27.2. shall not apply to devices which include an electronic light source control gear or a variable intensity control being part of the device.
- 5.27.4. A report shall be attached to the approval documentation describing the methods used to demonstrate compliance and the results obtained."

### Regulation No.112, Supplement 4 to the 01 series

Paragraph 5.3., insert a new sub-paragraph 5.3.1.3. and amend sub-para. 5.3.2.1.to read:

- "5.3. The headlamp shall be equipped with:
- ...
- 5.3.1.3 A means of controlling the voltage at the terminals of the device, within the limits as defined in Regulation No. 48, may, for convenience, be located within the body of the headlamp. However, for the purposes of type approval of the passing and/ or driving beam according to the provisions of this Regulation, such means of voltage control shall not be considered to be part of the headlamp and shall be disconnected during the testing to verify performance according to the requirements of this Regulation.**
- 5.3.2. and/or LED module(s):
- 5.3.2.1. electronic light source control gear(s) **associated with the operation of LED module(s)**, if applicable, shall be considered to be part of the headlamp; they may be part of the LED module(s);
- ..."

## II. Justification

1. At its sixty-third and sixty-fourth sessions, GRE considered proposals submitted by the expert from France, to introduce additional provisions concerning voltage control gear into Regulations Nos. 48 and 112:

- (a) Regulation No. 48 – GRE/2010/24 + Corr.1
- (b) Regulation No. 112 – GRE/2010/26

2. After discussion, GRE concluded that a more detailed consideration was necessary. France withdrew the two documents and agreed to work with GTB to develop an acceptable solution. Correspondingly GTB established a dedicated task force, led by French experts of GTB. The outcome of the task force is this proposal for amendments to Regulations Nos. 48 and 112.

3. The "OVIG" provisions in Regulation No. 48, paragraph 5.27. require that the operating voltage at the terminals of a lighting device shall be controlled to a maximum of 13.5v +3 per cent. The vehicle manufacturer is free to decide how these requirements will be achieved but generally there are two approaches:

(a) Adopt a means of controlling the vehicle system voltage and, as part of this, control the supply to the headlamps to comply with the "OVIG" requirements.

(b) Adopt a vehicle system voltage, which may, under particular conditions, be higher than the maximum allowed by the "OVIG" requirements, to satisfy other electrical supply and equipment requirements. In this case it is necessary to use a separate dedicated voltage control gear for the lighting device that may be integrated into the vehicle electrical wiring or, for convenience, it may be decided that the headlamp supplier provides this as part of the headlamp package.

4. Some type approval administrations are interpreting the wording of Regulation No. 48, paragraph 5.27., in such a way that the voltage control gear contained within the headlamp package, as described above, is considered to be part of the device and therefore shall be type approved with the device. In this case these administrations point out that Regulation No. 112 does not allow this. Other administrations have a different interpretation and argue that no changes to Regulation No. 112 are necessary. This is a proposal to introduce amendments into Regulations Nos. 48 and 112 to overcome these differences in interpretation.

5. Regulation No.112 only permits the type approval of devices fitted with Regulation No. 37 light sources producing passing or driving beams when operated at reference luminous flux. This clearly means that voltage control gear cannot be used during the type approval of the device. However, there is nothing to prevent a voltage control gear, intended to limit the maximum operating voltage to 13.5V +3 per cent, from being physically located in the body of the headlamp and connected to the terminals of the light source producing the passing and / or driving beam. For type approval, the correct current is supplied to the terminals of the device to achieve the reference luminous flux and the proposed wording of the new paragraph 5.3.1.3. states *"for the purposes of type approval of the passing and/ or driving beam according to the provisions of this Regulation, such means of voltage control shall not be considered to be part of the headlamp and shall be disconnected during the testing to verify performance according to the requirements of this Regulation"*.

6. Taking this approach, the current principals of the regulations are not changed, i.e:

(a) The type approval of the passing and driving beam is carried out according to Regulation No. 112 using an etalon lamp operated at a current adjusted to achieve the reference luminous flux as specified in Regulation No. 37.

(b) The control of the maximum voltage, at the terminals of the device, when the vehicle is in a constant voltage operating condition satisfies the requirements of Regulation No. 48.

7. This proposal to amend the provisions in Regulations Nos. 48 and 112 is intended to make it clear that the approach shown in the following diagram is allowed:

